

IN THE CLAIMS

1-7. (Canceled)

8. (Currently Amended) The low shock separation joint as recited in claim # 21 wherein said explosive device has a first volume within said cavity of said female member prior to detonation, wherein said explosive device has a second volume after detonation, and wherein said second volume is greater than said first volume.

9. (Currently Amended) The low shock separation joint as recited in claim # 21 wherein said explosive device includes an expandable housing around an explosive material and wherein said expandable housing does not rupture when said explosive material is detonated.

10. (Canceled)

11. (Currently Amended) The low shock separation joint as recited in claim # 21 wherein said split female member comprises a deformable metal.

12-20. (Canceled)

21. (Currently Amended) A low shock separation joint for coupling a first structure to a second structure comprising:

a male member having a first side, a second side opposite the first side, a plurality of first protrusions formed on and extending from the first side, and a plurality of second protrusions formed on and extending from the second side;

a split female member having a first half structure and a second half structure, the first half structure having a first flange and a plurality of first flange protrusions formed on and extending from the first flange, the second half structure having a second flange and a plurality of second flange protrusions formed on and extending from the second flange, the first flange opposing the second flange, and the first flange protrusions and the second flange protrusions

extending toward one another, wherein the plurality of first protrusions are configured to fit between and mate with the plurality of first flange protrusions, the plurality of second protrusions are configured to fit between and mate with the plurality of second flange protrusions, the plurality of first flange protrusions are configured to fit between and mate with the plurality of first protrusions, and the plurality of second flange protrusions are configured to fit between and mate with the plurality of second protrusions to prevent separation of the separation joint under tensile and compressive forces, and wherein the split female member is configured to clamp and hold the male member without any external fastening mechanism holding the first flange and the second flange to the male member;

the first half structure comprising a first cavity formed therein, and the second half structure comprising a second cavity formed therein, the first cavity and the second cavity forming a cavity for the female member when the first half structure and the second half structure are placed together;

the first and second flanges extending away from the cavity, and the female member separating the cavity from the male member, when the first half structure and the second half structure are placed together; and

an explosive device placed within the cavity, the explosive device when detonated releases the male member from the female member, by bending and physically modifying the first flange away from the male member and by bending and physically modifying the second flange away from the male member, without causing breakage of any component of the separation joint.

22. (Currently Amended) A low shock separation joint for coupling a first structure to a second structure comprising:

a male member having a first side, a second side opposite the first side, a plurality of first protrusions formed on and extending from the first side, and a plurality of second protrusions formed on and extending from the second side;

a split female member having a first half structure and a second half structure, the first half structure having a first flange and a plurality of first flange protrusions formed on and extending from the first flange, the second half structure having a second flange and a plurality of second flange protrusions formed on and extending from the second flange, the first flange

opposing the second flange, and the first flange protrusions and the second flange protrusions extending toward one another, wherein each of the plurality of first protrusions and each of the plurality of second protrusions includes a flat upper surface and an angled lower surface opposite the flat upper surface, each of the plurality of first flange protrusions and each of the plurality of second flange protrusions includes an angled upper surface and a flat lower surface opposite the angled upper surface, the flat upper surfaces mate with the flat lower surfaces and the angled upper surfaces mate with the angled lower surfaces when the first half structure and the second half structure are placed together around the male member, and the split female member is configured to clamp and hold the male member without any external fastening mechanism holding the first flange and the second flange to the male member;

the first half structure comprising a first cavity formed therein, and the second half structure comprising a second cavity formed therein, the first cavity and the second cavity forming a cavity for the female member when the first half structure and the second half structure are placed together;

the first and second flanges extending away from the cavity, and the female member separating the cavity from the male member, when the first half structure and the second half structure are placed together; and

an explosive device placed within the cavity, the explosive device when detonated releases the male member from the female member, by bending and physically modifying the first flange away from the male member and by bending and physically modifying the second flange away from the male member, without causing breakage of any component of the separation joint.

23. (New) The low shock separation joint as recited in claim 22, wherein said explosive device has a first volume within said cavity of said female member prior to detonation, wherein said explosive device has a second volume after detonation, and wherein said second volume is greater than said first volume.

24. (New) The low shock separation joint as recited in claim 22, wherein said explosive device includes an expandable housing around an explosive material and wherein said expandable housing does not rupture when said explosive material is detonated.

25. (New) The low shock separation joint as recited in claim 22, wherein said split female member comprises a deformable metal.